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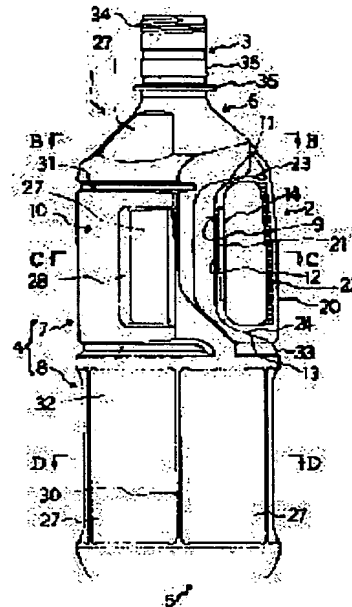
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MIURA MASAKI**(54) REDUCED PRESSURE ABSORBING POLYESTER-MADE BOTTLE WITH HANDLE****(57)Abstract:**

PURPOSE: To prevent an uneven deformation of a labeling face by a method wherein a bottle main body is made up of reduced-pressure absorbing faces on both sides of the labeling face, an upper barrel part including a handle-mounting part on the opposite side of the labeling face, a shoulder part provided with a reduced-pressure absorbing face above the labeling faces, and a lower barrel provided with two or more recessed reduced pressure-absorbing faces throughout the circumference.

CONSTITUTION: A bottle consists of a bottle main body 1 and a handle 2, and the bottle main body 1 has a neck part 3, a cylindrical barrel part 4, a closed bottom part 5 and a conical shoulder 6 between the neck part 3 and the barrel part 4. The cylindrical barrel part 4 is horizontally divided into two sections; an upper barrel 7 and a lower barrel 8. The upper barrel part 7 is provided with a handle mounting part 9 and a labeling face 10 on the opposite side of the handle mounting part 9. Reduce-pressure absorbing faces 27 are provided between the labeling face 10 and the handle mounting part 9. The reduced-pressure absorbing faces 27 have a projecting shape slightly protruding outward via short stepped parts 28 so that the reduced-pressure absorbing faces 27 can absorb reduced-pressure to prevent an uneven deformation of the labeling face 10 and the handle mounting part 9.

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CLAIMS

[Claim(s)]

[Claim 1] In the bundle deposit bottle equipped with the handle to which the body of a bottle formed by the drawing blow molding of thermoplastic polyester and the body of a bottle change from the thermoplastics of another object said body of a bottle A drum section when the section with bundle net income of a label side, the reduced pressure absorption side of the both sides of a label side, a label side, and an opposite hand is included, The bottle made from reduced pressure absorptivity bundle deposit polyester characterized by consisting of the shoulder equipped with the reduced pressure absorption side arranged in the upper part of a label side, and the bottom drum section which made the convex configuration two or more reduced pressure absorption sides, and established them in the perimeter through the articulated section.

[Claim 2] The bottle made from polyester according to claim 1 characterized by being the convex configuration where the reduced pressure absorption side of the both sides of a label side projected in the method of outside through the short level difference section.

[Claim 3] The bottle made from polyester according to claim 1 which consists of the shoulder by which the reduced pressure absorption side is following the part corresponding to the section with bundle net income through a bay.

[Claim 4] The bottle made from polyester according to claim 1 which prepares the concave bead of a hoop direction between the reduced pressure absorption side of a shoulder, and the label side of a top drum section, and grows into it.

[Claim 5] The bottle made from polyester according to claim 1 which prepares the concave bead of a hoop direction between the label side of a top drum section, and the reduced pressure absorption side of a bottom drum section, and grows into it.

[Claim 6] The bottle made from polyester according to claim 1 which forms the step for reinforcement in the boundary section with the reduced pressure absorption side of the section with bundle net income of said top drum section, and a bottom drum section, and grows into it.

[Claim 7] The bottle made from polyester according to claim 1 which forms the concave bead of a hoop direction in the boundary section of the reduced pressure absorption side of a top drum section, and the bundle net income attachment section, and grows into it.

[Claim 8] The bottle made from polyester according to claim 1 which has the surface ratio of the reduced pressure absorption side in a bottom drum section, a shoulder, and a top drum section in 80 to 70:10 to 20:10 to 10 range.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Industrial Application] About the bottle made from reduced pressure absorptivity bundle deposit polyester, this invention relates to the bottle made from polyester by which irregular thru/or dissymmetry reduced pressure deformation is effectively prevented in spite of the unsymmetrical structure of a handle, after carrying out restoration between heat of the contents (hot pack) to a detail more.

[0002]

[Description of the Prior Art] Since the hollow container made from plastics is excellent in lightweight nature and shock resistance, it is widely used as a container to various liquids, and the hollow container which carries out drawing blow molding of the polyethylene terephthalate (PET) above all, and changes has combination, such as transparency, gas barrier nature, lightweight nature, shock resistance, and moderate rigidity, and is widely used as a container for making liquid contents hold.

[0003] Among this drawing blow molding container, by the large-sized thing, although it is requested that a handle is attached from the ease of that handling, since a shaping top is difficult for fabricating a firm handle at a drawing blow molding process to a container and one, some proposals for attaching a handle to a drawing blow molding container are made.

[0004] In JP,3-90842,U concerning these people's proposal The crevice prepared so that it had the neck, drum section, and lock out pars basilaris ossis occipitalis which were fabricated by one by the blow molding or drawing blow molding of synthetic resin, and the maximum crevice might be almost the same as a neck to said a part of drum section or it might have a little larger path than a neck, The height of a crevice prepared so that a cross section might take the lead in a non-perfect circle form mostly, The periphery-like concave prepared in the perimeter of this height, While having the body of a container equipped with the upper part and the brief concave of the couple prolonged caudad along the crevice, respectively from the upper bed and soffit of this periphery-like concave, the endless grasping section fabricated with injection molding of; synthetic resin by one, and the mounting section and inserting the mounting section into a periphery-like concave The bundle deposit synthetic-resin container characterized by consisting of handle: fixed by inserting the core of the mounting section side edge section of the grasping section into a brief concave is indicated.

[0005] On the other hand, although being filled up with contents between heat is widely performed also in the bottle made from polyester in order to raise the shelf life of contents, reduced pressure deformation of a container surely arises by volume contraction of the contents by cooling. In order to prevent this, he prepares the panel section in the bottle side-attachment-wall section through the pillar section, and is trying to make reduced pressure deformation absorb in this panel section.

[0006]

[Problem(s) to be Solved by the Invention] However, with the bottle made from bundle deposit polyester, since the bottle volume is large, the contraction volume is also large, and since a bottle serves as unsymmetrical structure by preparing a handle, there is a problem of being easy to produce contraction deformation of a bottle in a form [irregular thru/or dissymmetry large moreover] (BOKON and hollow form).

[0007] If irregular thru/or dissymmetry contraction deformation arise, since the commodity value of a bottling product will be reduced remarkably, such a thing that you distribute to a vessel wall and is made it to absorb contraction deformation so that it may not be conspicuous becomes important at a bottle.

[0008] Furthermore, in a bundle deposit bottle, if such deformation arises in the mounting section of a handle and a bottle, immobilization with a handle and a bottle will become imperfect, it will be generated

with backlash, or a crack etc. will occur [further / may produce balking, when excessive, and / near the section with bundle net income] in a vessel wall, and troubles, such as leakage and lowering on the strength, will be produced.

[0009] Therefore, after the object of this invention carries out restoration between heat of the contents (hot pack), irregular thru/or dissymmetry reduced pressure deformation is in spite of the unsymmetrical structure of a handle to offer the bottle made from polyester prevented effectively.

[0010] After carrying out restoration between heat of the contents (hot pack), reduced pressure deformation is effectively absorbed in the part it was decided in spite of the unsymmetrical structure of a handle that a vessel wall would be, immobilization with a handle and a bottle is maintained thoroughly, and other objects of this invention are further to offer the bottle made from polyester by which the crack to a vessel wall [/ near the section with bundle net income] etc. is prevented effectively.

[0011]

[Means for Solving the Problem] In the bundle deposit bottle equipped with the handle to which the body of a bottle formed by the drawing blow molding of thermoplastic polyester and the body of a bottle change from the thermoplastics of another object in this invention It forms by the shoulder equipped with the reduced pressure absorption side arranged in said body of a bottle in a drum section when the section with bundle net income of a label side, the reduced pressure absorption side of the both sides of a label side, a label side, and an opposite hand is included, and the upper part of a label side, and the bottom drum section which made the convex configuration two or more reduced pressure absorption sides, and established them in the perimeter through the articulated section.

[0012] The above-mentioned section with bundle net income is good to consist of the crevice dented in the bottle core side, and good for a label side to see in a horizontal section and to consist of the curvature section.

[0013] Furthermore, it is good to prepare the concave bead of a hoop direction between the reduced pressure absorption side of a shoulder, and the label side of a top drum section, and to prepare the concave bead of a hoop direction between the label side of a top drum section, and the reduced pressure absorption side of a bottom drum section, and it good to form the step for reinforcement in the boundary section with the reduced pressure absorption side of the section with bundle net income of a top drum section, and a bottom drum section. Especially, with a mass bottle, forming the concave bead of a hoop direction in the boundary section of the reduced pressure absorption side of a top drum section and the bundle net income attachment section is admired by request.

[0014]

[Function] Although the body of a bottle formed by the drawing blow molding of thermoplastic polyester and the body of a bottle are equipped with the handle which consists of the thermoplastics of another object, the bottle made from reduced pressure absorptivity bundle deposit polyester of this invention In this invention, the body drum section of a bottle (side-attachment-wall section) is bisected up and down, and while carrying out functional separation at a drum section when the section with bundle net income and a label side are included, and a bottom drum section including a reduced pressure absorption side, a reduced pressure absorption side is established also between the label side of a top drum section, and the sections with bundle net income, and in the shoulder above a top drum section label side.

[0015] The section with bundle net income is a part important when ensuring immobilization of a handle and a bottle, and engagement and maintenance of a bottle. On the other hand, a label side it is a part important when displaying the name of article of contents, a class, a source, etc. certainly and raising the commodity value of a bottling product, and is based on reduced pressure of these parts -- in this invention, although irregular thru/or dissymmetry deformation are not allowed While establishing the section with bundle net income, and a label side in a top drum section and establishing a reduced pressure absorption side in a bottom drum section and a shoulder, the dissymmetry thru/or undesirable deformation by reduced pressure of the section with bundle net income and a label side is prevented by establishing a reduced pressure absorption side also between the section with bundle net income of a top drum section, and a label side, and making the great portion of reduced pressure absorb. That is, with the container of this invention, since the reduced pressure absorption side is arranged at the both sides of a top drum section label side, depression deformation of a label side can be prevented effectively. It was effective for preventing depression deformation of a label side to have established a reduced pressure absorption side in the shoulder of the label side upper part especially.

[0016] with the bottle of this invention, since it covered the perimeter of a bottom drum section and prepared through the articulated section by making two or more reduced pressure absorption sides into a convex configuration, although the top drum section was resembled, it compared with it and the cross

section of a bottom drum section was large Even if reduced pressure occurs by the volume cutback of contents, by using said articulated section as the supporting point, panel deformation is carried out, reduced pressure is absorbed, reduced pressure absorption is performed in parts other than the section with bundle net income, or a label side so that the reduced pressure absorption side of a convex configuration may serve as a concave surface configuration at reverse, and these dissymmetry deformation is prevented.

[0017] It is also important that the section with bundle net income and a label side are established in the top drum section through a reduced pressure absorption side. The section with bundle net income is the configuration which generally became depressed, on the other hand, a label side is the configuration which projected in the method of outside, and the reduced pressure absorption side which intervenes among these absorbs reduced pressure, and it prevents effectively deformation of a label side and the section with bundle net income while deformation by reduced pressure is eased in the form in which these carried out the phase complement.

[0018] Although the advantage of the section with bundle net income being easy to grasp also in the condition that a bottle center of gravity is filled up with a handle, and full is filled up with near and contents for consisting of the crevice dented in the bottle core side, and moreover making a case and a shop front contain in a compact is given The area of the label side established in the same top drum section as this section with bundle net income is comparatively large, and since it is the configuration moreover jutted out outside, it is common for it to be difficult to prevent that the edge section of a label side, especially a label side deforms at the time of reduced pressure. It is made for the reduced pressure absorption in respect of a label, i.e., a depression, not to arise in this invention by establishing a reduced pressure absorption side between the section with bundle net income, and a label side.

[0019] The fine sight top of making it the section with bundle net income and the label side of a top drum section mutually located in an opposite hand is good for a function top list. When the label side is a transverse plane by carrying out like this, a handle serves as a tooth back and is convenient on a fine sight. A step is formed in the boundary section with the reduced pressure absorption side of a top drum section and a bottom drum section in connection with this. Thereby, it can prevent that deformation of the reduced pressure absorption side of a bottom drum section affects the reduced pressure absorption side of a top drum section, and the section with bundle net income.

[0020] Moreover, the concave bead of a hoop direction is prepared between the reduced pressure absorption side of a shoulder, and the label side of a top drum section, the concave bead of a hoop direction is further prepared also between the label side of a top drum section, and the reduced pressure absorption side of a bottom drum section, and it is made for the deformation in the reduced pressure absorption side of a shoulder and a bottom drum section not to spread to a label side.

[0021] According to this invention, the above is synthesized, after carrying out restoration between heat of the contents (hot pack), reduced pressure deformation is effectively absorbed in the part it was decided in spite of the unsymmetrical structure of a handle that a vessel wall would be, the dissymmetry deformation besides an intention is prevented, immobilization with a handle and a bottle will be maintained thoroughly and the crack to a container wall [/ near the section with bundle net income] etc. will be prevented further effectively.

[0022]

[Example] The bundle deposit polyester bottle of this invention is explained based on a drawing.

[0023] Drawing 1 is the front view of one example of the bundle deposit polyester bottle of this invention, and right side view and drawing 3 of drawing 2 of a bottle of drawing 1 are the left side view of the bottle of drawing 1 . Top-face (flat surface) drawing and drawing 5 of drawing 4 of a bottle of drawing 1 are the bottom view of the bottle of drawing 1 , and an A-A sectional view [in / in drawing 6 / drawing 1], a B-B sectional view [in / in drawing 7 / drawing 1], a C-C sectional view [in / in drawing 8 / drawing 1], and drawing 9 are the D-D sectional views in drawing 1 .

[0024] The polyester bottle with a handle of this invention consists of the handle indicated to be the body of a bottle shown by 1 as a whole as shown in drawing 1 thru/or drawing 3 by 2 as a whole. In drawing 1 thru/or drawing 6 , the body 1 of a bottle consists of the neck 3, the tubed drum section 4, and the lock out pars basilaris occipitalis 5, and the frustum-like shoulder 6 exists between a neck 3 and a drum section 4.

[0025] The tubed drum section 4 is bisected up and down by the top drum section 7 and the bottom drum section 8, the section 9 with bundle net income is formed in the top drum section 7, and the label side 10 is established in the opposite hand of a top drum section.

[0026] The section 9 with [section with bundle net income] bundle net income consists of the crevice

which has become depressed towards the core of a bottle from the lower part of the frustum-like shoulder 6 so that it may be well shown in drawing 1 and 6. This ** crevice 9 with bundle net income consists of the underside 13 which inclined a little and has extended in the top-face [which inclined a little and has extended in the bottle core side] 11, side-face [which has extended almost vertically] 12, and drum side-face side, after hanging from a shoulder seen from a side face. In the example shown in a drawing, the crevice side face 12 is seen in a horizontal section (drawing 6), the maximum crevice of it is almost the same as that of a neck 3, or it is mostly established in the shape of radii so that it may have a larger path (distance from a shaft) a little than a neck 3.

[0027] As shown in drawing 1 and drawing 6, the height shown by 14 as a whole is prepared in the vertical side face 12 of this ** crevice 9 with bundle net income. It is formed so that the vertical cross section may become un-circular, and although a height 14 is an ellipse-like in the example shown in a drawing, as long as it is the configuration which can prevent a bundle revolution of the hand in the condition of having combined with the handle explained in full detail behind, it may be the configuration of arbitration, for example, may be an ellipse, an ovoid, a triangle, a square, a pentagon, or other polygons. Although this height 14 is fabricated by drawing blow molding by one with each part of the ** crevice 9 with bundle net income, and the other bodies of a bottle, it consists of an apical surface which has, by the way, closed the flange 16 which is located at the head of the tubed part of small spacing prolonged in the method of outside, and this tubed part, and increases a dimension in the crossing direction, and makes a flange, and the flange, and that interior is hollow as shown in the sectional view of drawing 6 R> 6.

[0028] Moreover, the periphery-like slot 18 is formed in the root of a height 14, and a handle 2 can be more firmly fixed as shown in the cross section of drawing 6.

[0029] The handle 2 in the bottle of this invention consists of the grasping section 20 and the mounting section 21 which were fabricated with injection molding of synthetic resin by one as a ring-like thing as another object with the bottle as it is shown in drawing 1, and 2 and 6. The grasping section 20 has the vertical section 22 by which the irregularity for skids is arranged by turns inside at small spacing, and is connected to the ring-like mounting section 21 through the upper part connection section 23 and the lower part connection section 24. It is embedded that there is no clearance in the periphery-like concave 18 around a height 14, and both fixed engagement is ensured as the ring-like mounting section 21 moreover has an inner circumference dimension almost equal to the periphery dimension by the body height 14 of a bottle, and the analog and it is shown in drawing 6.

[0030] From drawing 6 and drawing 8, it will be understood that the handle 2 does not project on parenchyma rather than the outside surface of the body of a bottle.

[0031] Moreover in [label side] this invention, the label side 10 is established in the opposite hand of the section 9 with bundle net income like the section 9 with bundle net income at the top drum section 7. It is because it is the configuration where are the configuration where the top drum section 7 had [this] the small cross section as compared with the bottom drum section 8, there was little reduced pressure deformation from the first as compared with the bottom drum section 8, and the section with bundle net income became depressed as compared with the bottom drum section, and the label side projected a little on the other hand and also has a complementary relation to both irregularity.

[0032] The reduced pressure absorption side 27 is established also between this label side 10 and the section 9 with bundle net income. This reduced pressure absorption side 27 is making the convex configuration which projected a little the method of outside through the short level difference section 28, and as it absorbs the undesirable deformation of a label side and the section with bundle net income, it absorbs reduced pressure. Although it is most desirable that it is a convex as for the reduced pressure absorption side 27, as long as reduced pressure is absorbable, a flat surface or a concave surface is sufficient.

[0033] In the suitable mode of this invention, in addition to establishing the reduced pressure absorption side 27 which intervenes between the crevice 9 with bundle net income, and the label side 10, it sees in a horizontal section and the label side 10 is formed in the curvature section. With this configuration, it prevents that the label side which gives force which juts out a label side over the method of outside through the short level difference section 28 as the reduced pressure absorption side 27 carries out depression deformation at the time of reduced pressure, and becomes from the curvature section at it carries out depression deformation.

[0034] In [bottom drum section] this invention, it crosses all over the bottom drum section 8, and they are established through an articulated section 30, using two or more reduced pressure absorption sides 27 as a convex configuration. The reduced pressure absorption side 27 is a quadrilateral which generally has area,

and, on the other hand, an articulated section 30 is the rib configuration of a narrow width. This reduced pressure absorption side 27 is important when what is done to the convex configuration, i.e., the configuration where the center section projected in the direction of the outside of a path, makes buckling perform reduced pressure absorption by using an articulated section as the supporting point as shown in drawing 9.

[0035] In the example shown in drawing, the reduced pressure absorption side 27 is crossed to the perimeter, six pieces are prepared, and these are the long quadrilaterals of the side side as compared with a top chord and the lower side. If the crosswise dimension of the reduced pressure absorption side 27 is small, since the volume which may be absorbed according to the deformation from a convex to a concave surface will become small, width of face should be made large as much as possible in the range which does not affect the appearance or function of a bottle.

[0036] As an example, generally 5 thru/or about eight pieces are suitable for the number which establishes the reduced pressure absorption side 27, and it is desirable 40 thru/or that 60mm especially of the crosswise average dimension is in 45 thru/or the range of 55mm, and, on the other hand, it is good 0.02 thru/or 0.08, and for especially the projection proportion (projection height / width of face) from the ends of the center section of the reduced pressure absorption side 27 to be in the range of 0.04 thru/or 0.06. If width of face and a projection proportion are smaller than the above-mentioned range, reduced pressure absorptivity is not enough, on the other hand, if larger than the above-mentioned range, on the occasion of reduced pressure absorption, dissymmetry deformation will arise or a subsequent container appearance will worsen. The height direction dimension of the reduced pressure absorption side 27 is the same as a crosswise dimension, or it is desirable that it is larger than this.

[0037] Moreover, an articulated section 30 is the thing of the rib configuration used as the supporting point, and are 0.5 thru/or an about 5mm small thing in the range in which the supporting point is not crushed.

[0038] In [shoulder] this invention, the reduced pressure absorption side 27 is arranged also to the shoulder 6 of the upper part of the label side 10. As compared with a top chord, the reduced pressure absorption side 27 of a shoulder is the thing of trapezoidal shape with the long die length of the lower side, and two or more (at the example shown in drawing, they are three pieces) these reduced pressure absorption sides 27 are established through the articulated section 30, and it is continuing through a bay 29 in the part 26 corresponding to the section with bundle net income. And by having formed the bay 29 in addition to establishing the reduced pressure absorption side 27, force which a bay 29 deforms into the inner direction and juts out the part 26 corresponding to the section with bundle net income over the method of outside is given as the reduced pressure absorption side 27 carries out depression deformation, and depression deformation of the part 26 corresponding to the section with bundle net income is prevented. With the bottle of this invention, the reduced pressure absorption side 27 is established in all the top drum sections 7, the bottom drum sections 8, and shoulders 6 so that the label side 10 may be surrounded, but when it acts especially effective in the reduced pressure absorption side 27 established in the shoulder 6 preventing reduced pressure deformation of the label side 10 and the reduced pressure absorption side is not established in a shoulder, reduced pressure deformation of the label side 10 cannot be avoided. Of course, although the reduced pressure absorption side of a shoulder needs to prepare in the upper part of the label side 10, the reduced pressure absorption side 27 may be established also in the part 26 corresponding to the section with bundle net income.

[0039] In the bottle of [configuration of whole container] this invention, although the reduced pressure absorption side 27 is established in a shoulder 6 and the bottom drum section 8, it is desirable to make it the reduced pressure deformation in the reduced pressure absorption side 27 of a shoulder 6 and the bottom drum section 8 not influence the label side 10 of the top drum section 7. For this reason, the concave bead 31 is formed between the reduced pressure absorption side 27 of a shoulder 6, and the top drum section label side 10, and the concave bead 32 of a hoop direction is formed also between the top drum section label side 10 and the reduced pressure absorption side 27 of the bottom drum section 8.

[0040] Furthermore, in order to prevent deformation for this connection, he forms the step 33 for reinforcement in the boundary section with the reduced pressure absorption side 27 of the section 9 with bundle net income of a top drum section, and the bottom drum section 8, and is trying to prevent deformation of this part in respect of the reinforcement of positive maintenance on a knob and a container, also at the time of reduced pressure, although the part of the section 9 with bundle net income of the top drum section 7 and the bottom drum section 8 is very important.

[0041] The bottle of this invention is used for the application which is filled up with contents between heat and seals them as it is. In order to seal contents, the screw 34 for conclusion opening of a cap and the

level difference section 35 grade for conclusion of a pilfer-proof packaging cap are prepared in the neck 3 of a bottle, and the support ring 36 which supports a bottle at a production process or a restoration process further is formed in it. Moreover, although the pars basilaris ossis occipitalis 5 is making the shape of a dome to which the center section became high as compared with the ground plane, the engagement crevice 37 which positions a bottle and prevents that revolution is established in this pars basilaris ossis occipitalis 5.

[0042] In the bottle of this invention, although the reduced pressure absorption side 27 is distributed and established in the bottom drum section 8, the shoulder 6, and the top drum section 7, the surface ratio of those reduced pressure absorption sides is the above-mentioned sequence, and, generally it is desirable [the side / surface ratio] 80:70:10:20:10:10 and that it is especially in 80:10:10 in respect of reduced pressure absorption, deformation prevention of a label side, etc.

[0043] In drawing 10 which shows other examples of the bottle of this invention, this bottle is the especially large thing of content volume, and the concave bead 38 of a hoop direction is formed in the boundary section of the reduced pressure absorption side 27 of the top drum section 7, and the section 9 with bundle net income. Although there is a possibility that this part may deform in it when there is an inclination for the reinforcement of the above-mentioned boundary section to become low and an axial load and reduced pressure occur in it since the heights 14 of ** with bundle net income are formed in the section 9 with bundle net income, this deformation can be prevented by making the above-mentioned concave bead form.

[0044] With the bottle of this invention, the section 9 with bundle net income and the label side 10 of the top drum section 7 are mutually located in an opposite hand as shown in drawing 1 thru/or 3. When the label side 10 is a transverse plane by carrying out like this, a handle 2 serves as a tooth back, a handle 2 hides, and it is convenient on a fine sight.

[0045] The bundle deposit polyester bottle of this invention is manufactured by the following approaches. the approach (insertion blow-molding method) of manufacturing a handle 2 with injection molding beforehand, and inserting this handle in blow metal mold, and carrying out drawing blow molding of the preforming for the bodies of a bottle in blow metal mold -- being certain -- it is -- beforehand -- the inside of blow metal mold -- preforming for the bodies of a bottle -- drawing blow molding -- carrying out -- the body 1 of a bottle -- manufacturing -- this body 1 of a bottle -- injection -- public funds -- it is manufactured by the approach (an insertion injection-molding method) of inserting in a mold and carrying out injection molding of the resin for handles. The former approach is suitable.

[0046] Moreover, the body 1 of a bottle consists of thermoplastic polyester among the bundle deposit polyester bottles of this invention. The so-called refining PET which made the small quantity of other glycols, such as a hexahydro xylene glycol, contain as thermoplastic polyester as the thermoplastic polyester which makes an ethylene terephthalate unit a subject, for example, polyethylene terephthalate, (PET), and a glycol component, or made the small quantity of other dibasic-acid components, such as isophthalic acid and a hexahydro terephthalic acid, contain as a dibasic-acid component is used. Even if these polyester is independent, it can be used in the range which does not spoil the essence also in the form of a blend object with other resin, such as nylon of a small amount, a polycarbonate, or polyarylate.

[0047] What the grade for bottle formation is sufficient as the intrinsic viscosity (η) of the thermoplastic polyester to be used, and that of is in the range of 0.70 thru/or 0.90 dl/g especially, and has 1.60 or less % of the weight of contents of a diethylene-glycol unit especially in 1.50 or less % of the weight of within the limits is used suitably. [0.65 or more]

[0048] Closed-end preforming used for drawing blow molding is manufactured in itself by the technique of well-known arbitration, for example, the injection-molding method, a pipe extrusion method, etc. By the former approach, melting polyester is injected and closed-end preforming equipped with the top neck part corresponding to the last container is manufactured in the amorphous condition. The latter approach closes the other end and makes it closed-end preforming while it cuts the extruded amorphous pipe and makes a top neck part form in the end section with compression molding. Generally, manufacturing by the injection-molding method is desirable. Generally especially a radiation condition etc. is 260 thru/or the injection temperature of 300 degrees C, 30, or 60kg/cm², although not limited. It is an injection pressure and closed-end preforming can be fabricated.

[0049] Since thermal resistance and rigidity are given to preforming obtained in this way, there is a case where crystalize by heat treatment and the opening neck which has the screwing section, the fitting section, a retaining ring, etc. is made to milk in the phase of preforming, on the other hand, the below-mentioned biaxial drawing blow may be completed, a slack thing may be crystalized after the completion of bottle shaping, and the opening neck of a non-extended part may be milked.

[0050] preforming which should be carried out drawing blow molding -- drawing temperature -- generally preheating is carried out to the temperature of 100 thru/or 130, and, subsequently biaxial stretching is carried out. It considers as the bottle which pulls to shaft orientations, makes them extend and has the crystallinity of the side-attachment-wall section, i.e., a top drum section, and a bottom drum section in 25 - 30% of range in the hollow metal mold heated by 60 - 100 degrees while equipping with preforming of the thermoplastic polyester by which preheating was carried out to the above-mentioned temperature and making a hoop direction carry out the expansion drawing of this preforming, and while preventing the bottle deformation at the time of contents restoration, reduced-pressure absorption in a reduced-pressure absorption side performs effectively.

[0051] the draw magnification in the last container -- an area scale factor -- 5 thru/or 14 times -- especially -- 7 thru/or 12 times -- suitable -- on the other hand -- a shaft-orientations drawing line scale factor -- 2 -- or it considers especially as 2.5 thru/or 3 times, and especially a hoop direction drawing line scale factor is [5 times] 3.5 times better 2 thru/or to consider as 3 thru/or 4 times.

[0052] The thing of arbitration can be used if it is thermoplastics which can injection mold as a handle 2. As such resin, polyethylene terephthalate (PET), Thermoplastic polyester [, such as polybutylene terephthalate]; Polycarbonates; Acrylic-Butadiene Styrene (ABS plastics); -- polyacetal resin; -- acrylic resin; isotactic polypropylene; polystyrene [, such as nylon; polymethylmethacrylate,], such as nylon 6, Nylon 66, and those copolyamides, etc. -- others -- Low -, inside - or high-consistency polyethylene, ethylene propylene rubber, an ethylene-butene-1 copolymer, styrene-butadiene thermoplastic elastomer, etc. can be mentioned. Naturally various coloring agents, a bulking agent, etc. can be blended with handle molding resin.

[0053] The bundle deposit bottle of 1.8l. of content volume of the configuration shown in drawing 1 thru/or 9 was manufactured using preforming made from copolymerized polyester and the handle made from polypropylene containing 1.3 mol % of the isophthalic acid of examples of polyethylenenaphthalate/isophthalate. The heat setting of a bottle was performed at 80 degrees C. The dimension of each part is as follows.

[0054]

The amount of PET eyes 85g, aperture 36mm, overall height 318mm, drum section overall diameter 109mm, handle (manual insertion section)

Height 82mm The direction dimension of a path 22mm, bottom drum section reduced pressure absorption side 6th page Gross area 316cm², shoulder reduced pressure absorption side 3rd page Gross area 41cm², top drum section reduced pressure absorption side 2nd page Gross area 41cm², label side (pasting side) Height 75mm Width of face 82mm, [0055] The above-mentioned bottle was filled up with 1.8l. of sake, and it cooled at 5 degrees C and 15 degrees C after restoration at 60 degrees C. The volume reduction after cooling was 49ml at 58ml and 15 degrees C in 5 degrees C. Most swellings of the bottle at the time of restoration were not accepted.

[0056] In the result of having observed the bottle after cooling, reduced pressure was altogether absorbed in respect of reduced pressure absorption of the bottom drum section of a bottle, a shoulder, and a top drum section, and the undesirable deformation in the ** crevice with bundle net income and a label side was not accepted at all. In 5-degree-C cooling, the thing of a convex configuration retreated to the diameter inboard of 5.6mm, and had reversed the reduced pressure absorption side of a bottom drum section in the concave surface configuration.

[0057] The polyester bottle was manufactured like the example 1 except making example 2 content volume into 2.7l., and carrying out a container configuration as drawing 10. The above-mentioned bottle was filled up with 2.7l. of whiskey whisky and water, and it cooled at 15 degrees C after restoration at 60 degrees C. Most swellings of the bottle at the time of restoration were not accepted. In the result of having observed the bottle after cooling, reduced pressure was altogether absorbed in respect of reduced pressure absorption of the bottom drum section of a bottle, a shoulder, and a top drum section, and the undesirable deformation in the ** crevice with bundle net income and a label side was not accepted at all.

[0058]

[Effect of the Invention] In the bottle made from reduced pressure absorptivity bundle deposit polyester equipped with the handle to which the body of a bottle formed by the drawing blow molding of thermoplastic polyester and the body of a bottle change from the thermoplastics of another object according to this invention A drum section when the body drum section of a bottle (side-attachment-wall section) is bisected up and down and the section with bundle net income, a label side, and a reduced pressure absorption side are included, While covering the perimeter, forming through an articulated section from the bottom drum section which established the reduced pressure absorption side, and the

shoulder equipped with the reduced pressure absorption side on a label side and making functional separation perform After carrying out restoration between heat of the contents (hot pack) by having distributed and arranged the reduced pressure absorption side to the perimeter of a label side, reduced pressure deformation in spite of the unsymmetrical structure of a handle It is effectively absorbed in the part it was decided that a vessel wall would be, the dissymmetry deformation besides the intention of a label side is prevented, immobilization with a handle and a bottle is maintained thoroughly, and the appearance of a label side can be maintained good.

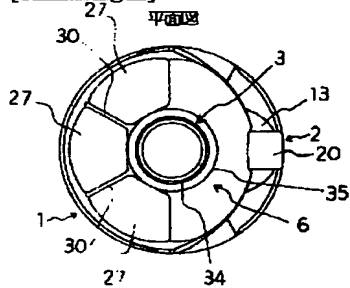
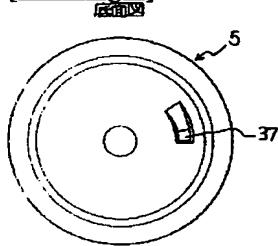
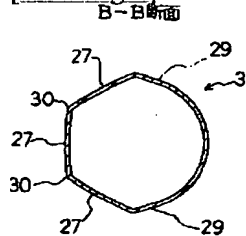
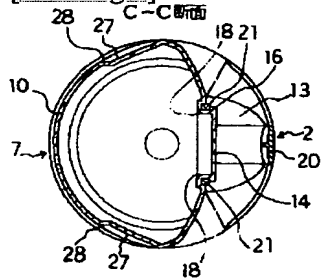
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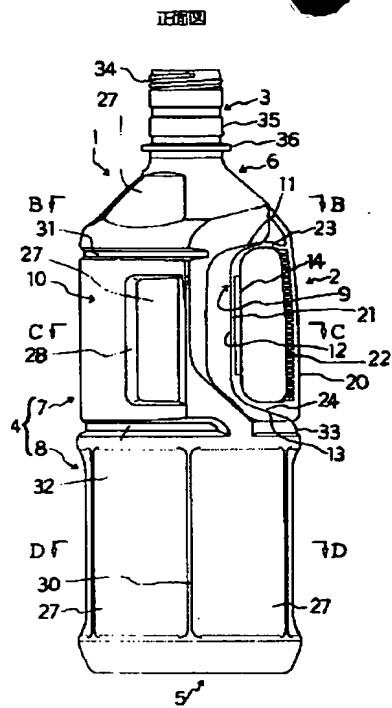
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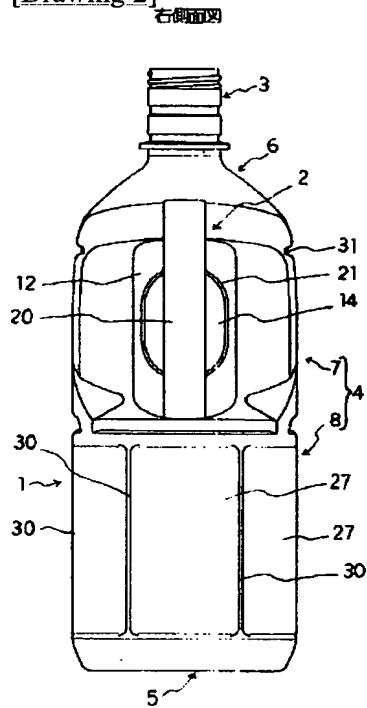
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DRAWINGS

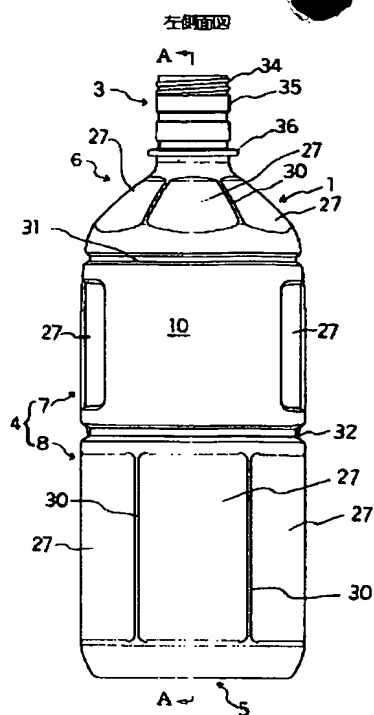
[Drawing 4]**[Drawing 5]****[Drawing 7]****[Drawing 8]****[Drawing 1]**



[Drawing 2]

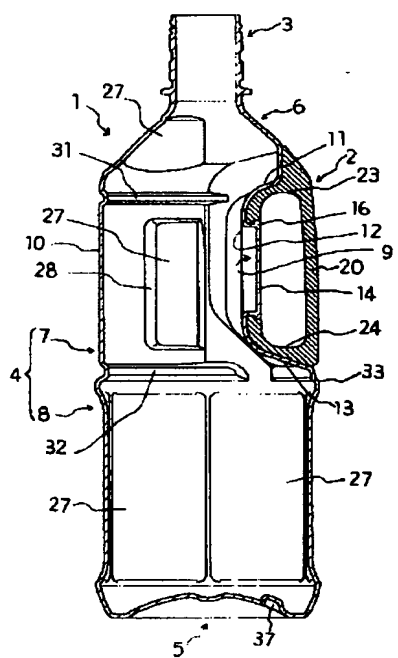


[Drawing 3]

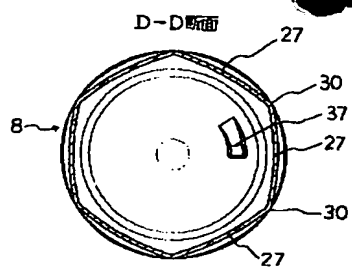


[Drawing 6]

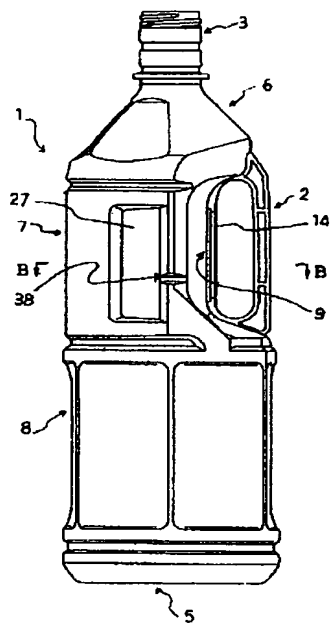
A-A断面



[Drawing 9]



[Drawing 10]
正視図



[Translation done.]

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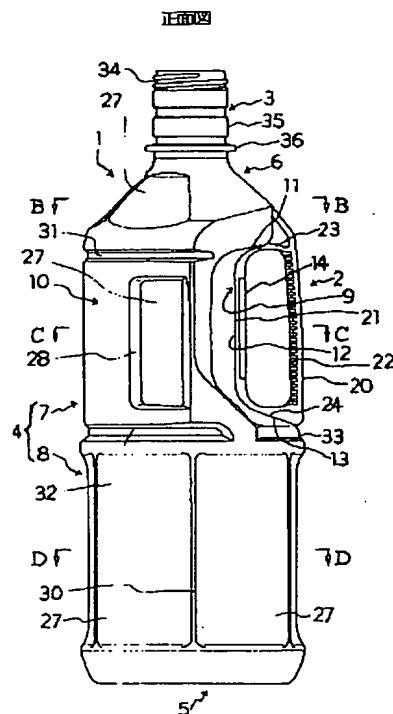
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(54) 【発明の名称】 減圧吸収性把手付ポリエステル製ボトル

(57) 【要約】

【目的】 内容物を熱間充填（ホットパック）した後での不整乃至不齊な減圧変形が、把手による非対称構造にもかかわらず、有効に防止されると共に、容器壁の決まった部分で有効に吸収され、把手とボトルとの固定が完全に維持され、更に把手取付部の近傍における容器壁へのクラック等も有効に防止されるポリエステル製ボトルを提供する。

【構成】 減圧吸収性把手付ポリエステル製ボトルにおいて、ボトル本体胴部（側壁部）を上下に二分し、把手取付部、ラベル面及び減圧吸収面を含む上胴部と、全周にわたって、接続部を介して、減圧吸収面を設けた下胴部と、ラベル面上の減圧吸収面を備えた肩部とから形成し、機能分離を行わせると共に、ラベル面周囲に減圧吸収面を分散して配置した。



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【特許請求の範囲】

【請求項 1】 熱可塑性ポリエステル延伸ブロー成形で形成されたボトル本体と、ボトル本体とは別体の熱可塑性樹脂から成る把手を備えた把手付ボトルにおいて、前記ボトル本体は、ラベル面とラベル面の両側の減圧吸収面とラベル面と反対側の把手取付部を含む上胴部と、ラベル面の上部に配置された減圧吸収面を備えた肩部と、複数の減圧吸収面を凸面形状として接続部を介して全周に設けた下胴部とから成ることを特徴とする減圧吸収性把手付ポリエステル製ボトル。

【請求項 2】 ラベル面の両側の減圧吸収面が短い段差部を介して外方に突出した凸面形状であることを特徴とする請求項 1 記載のポリエステル製ボトル。

【請求項 3】 減圧吸収面が直線部を介して把手取付部に対応する部分に連続している肩部から成る請求項 1 記載のポリエステル製ボトル。

【請求項 4】 肩部の減圧吸収面と上胴部のラベル面との間に周方向の凹ビードを設けて成る請求項 1 記載のポリエステル製ボトル。

【請求項 5】 上胴部のラベル面と下胴部の減圧吸収面間との間に周方向の凹ビードを設けて成る請求項 1 記載のポリエステル製ボトル。

【請求項 6】 前記上胴部の把手取付部と下胴部の減圧吸収面との境界部に補強用段部を形成して成る請求項 1 記載のポリエステル製ボトル。

【請求項 7】 上胴部の減圧吸収面と把手取り付け部との境界部に周方向の凹ビードを形成して成る請求項 1 記載のポリエステル製ボトル。

【請求項 8】 下胴部、肩部及び上胴部における減圧吸収面の面積比が、80～70：10～20：10～10 範囲にある請求項 1 記載のポリエステル製ボトル。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、減圧吸収性把手付ポリエステル製ボトルに関するもので、より詳細には、内容物を熱間充填（ホットパック）した後での不整乃至不齊な減圧変形が、把手による非対称構造にもかかわらず、有効に防止されるポリエステル製ボトルに関する。

【0002】

【従来の技術】プラスチック製の中空容器は、軽量性及び耐衝撃性に優れていることから、各種液体に対する包装容器として広く使用されており、就中ポリエチレンテレフタレート（PET）を延伸ブロー成形して成る中空容器は、透明性、ガスバリアー性、軽量性、耐衝撃性、適度な剛性等の組合せを有し、液体内容物を収容させるための包装容器として広く使用されている。

【0003】この延伸ブロー成形容器の内大型のものは、その取扱いの容易さから把手を付けることが要望されているが、延伸ブロー成形工程で容器と一体に強固な把手を成形することは、成形上困難であることから、延

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伸ブロー成形容器に把手を付けるための提案が幾つか行われている。

【0004】本出願人の提案にかかる実開平 3-90842 号公報には、合成樹脂のブロー成形或いは延伸ブロー成形により一体に成形された首部、胴部及び閉塞底部を備え、前記胴部の一部に最凹部が首部とほぼ同じか或いは首部よりもやや大きい径を有するように設けられた凹部と、凹部のほぼ中心に断面が非真円形となるように設けられた突起部と、該突起部の周囲に設けられた周状凹溝と、該周状凹溝の上端及び下端から凹部に沿って夫々上方及び下方に延びる一対の短い凹溝とを備えた容器本体と；合成樹脂の射出成形で一体に成形されたエンドレスの把持部と取付部とを備え且つ取付部が周状凹溝内に挿入されると共に把持部の取付部側端部の中心部が短い凹溝内に挿入されることにより固定された把手：とから成ることを特徴とする把手付合成樹脂容器が記載されている。

【0005】一方、内容物の保存性を高めるために、内容物を熱間充填することは、ポリエステル製ボトルにおいても広く行われているが、冷却による内容物の容積収縮により、容器の減圧変形が必ず生じる。これを防止するために、ボトル側壁部にピラー部を介してパネル部を設け、このパネル部で減圧変形を吸収させるようにしている。

【0006】

【発明が解決しようとする課題】しかしながら、把手付ポリエステル製ボトルでは、ボトル容積が大きいため、収縮容積も大きく、また把手を設けることにより、ボトルが非対称構造となるため、ボトルの収縮変形が大きくしかも不整乃至不齊な形（ボコシと窪んだ形）で生じやすいという問題がある。

【0007】ボトルにこのような不整乃至不齊収縮変形が生じると、瓶詰め製品の商品価値を著しく低下させるので、収縮変形を目立たないように容器壁に分散して吸収させることが重要となる。

【0008】更に、把手付ボトルにおいて、把手とボトルとの取付部にこのような変形が生じると、把手とボトルとの固定が不完全なものとなって、ガタ付きを生じたり或いは甚だしい場合には離脱を生じることがあり、更に把手取付部の近傍において、容器壁にクラック等が発生して、漏洩や強度低下等のトラブルを生じる。

【0009】従って、本発明の目的は、内容物を熱間充填（ホットパック）した後での不整乃至不齊な減圧変形が、把手による非対称構造にもかかわらず、有効に防止されるポリエステル製ボトルを提供するにある。

【0010】本発明の他の目的は、内容物を熱間充填（ホットパック）した後での減圧変形が、把手による非対称構造にもかかわらず、容器壁の決まった部分で有効に吸収され、把手とボトルとの固定が完全に維持され、更に把手取付部の近傍における容器壁へのクラック等も

有効に防止されるポリエステル製ボトルを提供するにある。

【 0 0 1 1 】

【課題を解決するための手段】本発明では、熱可塑性ポリエステル延伸ブロー成形で形成されたボトル本体と、ボトル本体とは別体の熱可塑性樹脂から成る把手を備えた把手付ボトルにおいて、前記ボトル本体を、ラベル面とラベル面の両側の減圧吸収面とラベル面と反対側の把手取付部を含む上胴部と、ラベル面上部に配置された減圧吸収面を備えた肩部と、複数の減圧吸収面を凸面形状として接続部を介して全周に設けた下胴部とで形成する。

【 0 0 1 2 】上記把手取付部は、ボトル中心側に凹んだ凹部から成っているのがよく、またラベル面が、水平断面で見て、曲率部から成っているのがよい。

【 0 0 1 3 】更に、肩部の減圧吸収面と上胴部のラベル面との間に周方向の凹ビードを設け、上胴部のラベル面と下胴部の減圧吸収面間との間に周方向の凹ビードを設けるのがよく、また上胴部の把手取付部と下胴部の減圧吸収面との境界部に補強用段部を形成するのがよい。特に、大容量のボトルでは、所望により、上胴部の減圧吸収面と把手取付部との境界部に周方向の凹ビードを形成することが推奨される。

【 0 0 1 4 】

【作用】本発明の減圧吸収性把手付ポリエステル製ボトルは、熱可塑性ポリエステルの延伸ブロー成形で形成されたボトル本体と、ボトル本体とは別体の熱可塑性樹脂から成る把手とを備えているが、本発明では、ボトル本体胴部（側壁部）を上下に二分し、把手取付部及びラベル面を含む上胴部と、減圧吸収面を含む下胴部とに機能分離すると共に、上胴部のラベル面と把手取付部との間にも、上胴部ラベル面より上の肩部にも減圧吸収面を設ける。

【 0 0 1 5 】把手取付部は、把手とボトルの固定及び係合とボトルの保持とを確実に行う上で重要な部分であり、一方ラベル面は、内容物の品名、種類、出所等を確実に表示し且つ瓶詰め製品の商品価値を高める上で重要な部分であり、これらの部分の減圧による不整乃至不斉変形は許されないが、本発明では、把手取付部及びラベル面上胴部に設け、下胴部と肩部とに減圧吸収面を設けると共に上胴部の把手取付部とラベル面との間にも減圧吸収面を設けて減圧の大部分を吸収させることにより、把手取付部及びラベル面の減圧による不斉乃至不整変形を防止する。即ち、本発明の容器では、上胴部ラベル面の両側に減圧吸収面が配置されているので、ラベル面の凹み変形を有効に防止できる。特にラベル面上方の肩部に減圧吸収面を設けることがラベル面の凹み変形を防止するのに効果的であった。

【 0 0 1 6 】本発明のボトルでは、上胴部に比して、下胴部の断面積は大きい、下胴部の全周にわたって、

複数の減圧吸収面を凸面形状として接続部を介して設けたため、内容物の体積縮小によって減圧が発生しても、前記接続部を支点として、凸面形状の減圧吸収面が逆に凹面形状となるようにパネル変形して減圧を吸収し、把手取付部やラベル面以外の部分で減圧吸収が行われ、これらの不斉変形が防止される。

【 0 0 1 7 】上胴部に把手取付部とラベル面とが減圧吸収面を介して設けられていることも重要であり、把手取付部は一般にくぼんだ形状であり、一方ラベル面は外方に突出した形状であり、これらが相補完了した形で減圧による変形が緩和されると共に、これらの間に介在する減圧吸収面が、減圧を吸収して、ラベル面や把手取付部の変形を有効に防止する。

【 0 0 1 8 】把手取付部は、ボトル中心側に凹んだ凹部から成ることが、把手がボトル重心に近く、内容物がフルに充填されている状態においても把持が容易で、しかもケースや店頭にコンパクトに収納させ得るという利点を与えるが、この把手取付部と同じ上胴部に設けられているラベル面の面積が比較的大きく、しかも外側に張り出した形状となっているから、減圧時にラベル面、特にラベル面の端縁部が変形するのを防止することが困難なことが多い。本発明では、把手取付部とラベル面との間に減圧吸収面を設けることにより、ラベル面での減圧吸収、即ち凹みが生じないようにする。

【 0 0 1 9 】上胴部の把手取付部とラベル面とが互いに反対側に位置するようにするのが機能上並びに美観上よい。こうすることにより、ラベル面が正面となっているときには、把手が背面となり、美観上好都合である。これに伴って、上胴部と下胴部の減圧吸収面との境界部に段部を形成する。これにより、下胴部の減圧吸収面の変形が上胴部の減圧吸収面や把手取付部に影響を与えるのを防止することができる。

【 0 0 2 0 】また、肩部の減圧吸収面と上胴部のラベル面との間に周方向の凹ビードを設け、更に上胴部のラベル面と下胴部の減圧吸収面間との間にも周方向の凹ビードを設けて、肩部及び下胴部の減圧吸収面における変形がラベル面に伝搬しないようにする。

【 0 0 2 1 】本発明によれば、以上が総合されて、内容物を熱間充填（ホットパック）した後での減圧変形が、把手による非対称構造にもかかわらず、容器壁の決まった部分で有効に吸収され、意図外の不斉変形が防止され、把手とボトルとの固定が完全に維持され、更に把手取付部の近傍における器壁へのクラック等も有効に防止されることになる。

【 0 0 2 2 】

【実施例】本発明の把手付ポリエステルボトルについて、図面に基いて説明する。

【 0 0 2 3 】図 1 は、本発明の把手付ポリエステルボトルの一実施例の正面図であり、図 2 は図 1 のボトルの右側面図及び図 3 は図 1 のボトルの左側面図である。図 4

は図 1 のボトルの上面（平面）図及び図 5 は図 1 のボトルの底面図であり、図 6 は図 1 における A-A 断面図、図 7 は図 1 における B-B 断面図、図 8 は図 1 における C-C 断面図、図 9 は図 1 における D-D 断面図である。

【0024】本発明の把手付きポリエステルボトルは、図 1 乃至図 3 に示すように全体として 1 で示すボトル本体と全体として 2 で示す把手とから成る。図 1 乃至図 6 において、ボトル本体 1 は、首部 3、筒状胴部 4 及び閉塞底部 5 から成っており、首部 3 と胴部 4 との間には錐台状肩部 6 が存在する。

【0025】筒状胴部 4 は、上胴部 7 と下胴部 8 とに上下に二分されており、上胴部 7 には、把手取付部 9 が設けられており、上胴部の反対側にはラベル面 10 が設けられている。

【0026】〔把手取付部〕把手取付部 9 は、図 1 及び 6 によく示されるように、錐台状肩部 6 の下方からボトルの中心に向けて窪んでいる凹部から成っている。この把手取付用凹部 9 は側面からみて、肩部から垂下した後、ボトル中心側に若干傾斜して延びている上面 11、

ほぼ垂直に延びている側面 12 及び胴側面側に若干傾斜して延びている下面 13 とから成っており、図面に示す実施例では、凹部側面 12 は、水平断面（図 6）でみて最凹部が首部 3 とほぼ同じか或いは首部 3 よりも若干大きい径（軸からの距離）を有するように、ほぼ円弧状に設けられている。

【0027】この把手取付用凹部 9 の垂直側面 12 に、図 1 及び図 6 に示されるように、全体として 14 で示す突起部が設けられる。突起部 14 はその垂直横断面が非円形となるように形成されており、図面に示す実施例では長円状であるが、後に詳述する把手と組合せた状態で把手の回転を阻止し得るような形状であれば任意の形状であってよく、例えば、楕円、卵形、三角形、四角形、五角形或いはその他の多角形等であってもよい。この突起部 14 は把手取付用凹部 9 及びその他のボトル本体の各部分と共に延伸ブロー成形で一体に形成されるが、図 6 の断面図に示すとおり、外方に延びている小間隔の筒状部、該筒状部の先端に位置し且つ横断方向に寸法を増大してフランジをなすフランジ部 16 及びフランジ部のところで閉じている先端面からなっており、その内部は中空である。

【0028】また、図 6 の断面に示されるとおり、突起部 14 の付け根には周状の溝 18 が形成されており、把手 2 をより強固に固定できるようになっている。

【0029】本発明のボトルにおける把手 2 は、図 1、2 及び 6 に示すとおり、ボトルとは別体として、合成樹脂の射出成形で一体にリング状のものとして成形された把持部 20 と取付部 21 から成っている。把持部 20 は、滑り止め用の凹凸が小間隔で交互に内側に配置されている垂直部 22 を有し、上方連結部 23 及び下方連結

部 24 を介して、リング状の取付部 21 に接続されている。リング状取付部 21 は、ボトル本体突起部 14 と相似形でしかもその外周寸法とほぼ等しい内周寸法を有し、図 6 に示すとおり、突起部 14 の周囲の周状凹溝 18 に隙間なく埋め込まれ、両者の固定係合が確実に行われるようになっている。

【0030】図 6 及び図 8 から、把手 2 は、ボトル本体の外面よりも実質上突出していないことが了解されよう。

【0031】〔ラベル面〕本発明では、ラベル面 10 を、把手取付部 9 と同様に上胴部 7 に、しかも把手取付部 9 の反対側に設ける。これは、上胴部 7 が下胴部 8 に比して、断面積が小さく、下胴部 8 に比して減圧変形が元々少なく、把手取付部 9 が下胴部に比して窪んだ形状であり、一方ラベル面がやや突出した形状であって、両者凹凸に対して相補的な関係にあることにもよる。

【0032】このラベル面 10 と把手取付部 9 との間にも、減圧吸収面 27 を設ける。この減圧吸収面 27 は、短い段差部 28 を介して外方にやや突出した凸面形状をしており、ラベル面及び把手取付部の不整形変形を吸収する様に減圧を吸収する。減圧吸収面 27 は凸面となっていることが最も好ましいが、減圧を吸収できる限り平面でも凹面でもよい。

【0033】本発明の好適態様では、把手取付凹部 9 とラベル面 10 との間に介在する減圧吸収面 27 を設けることに加えて、水平断面で見て、ラベル面 10 を曲率部で形成する。この構成では、減圧時に、減圧吸収面 27 が凹み変形するにつれて短い段差部 28 を介して、ラベル面を外方に張り出すような力を付与し、曲率部からなるラベル面が凹み変形するのを防止する。

【0034】〔下胴部〕本発明では、下胴部 8 の全面にわたって、複数の減圧吸収面 27 を凸面形状として連接部 30 を介して設ける。減圧吸収面 27 は一般に面積のある四辺形であり、一方連接部 30 は細幅のリブ形状である。この減圧吸収面 27 は、図 9 に示されるように、凸面形状、即ち中央部が径外方向に突出した形状としておくことが、連接部を支点として、バックリングにより減圧吸収を行わせる上で重要である。

【0035】図に示す具体例において、減圧吸収面 27 は全周にわたって、6 個設けられており、これらは上辺及び下辺に比して、側辺の長い四辺形である。減圧吸収面 27 の幅方向寸法が小さいと、凸面から凹面への変形によって吸収し得る容積が小さくなるから、ボトルの外観や機能に影響を与えない範囲で幅を可及的に大きくすべきである。

【0036】一例として、減圧吸収面 27 を設ける個数は、一般に 5 乃至 8 個ぐらいが適当であり、その幅方向平均寸法は、40 乃至 60 mm、特に 45 乃至 55 mm の範囲にあるのが好ましく、一方減圧吸収面 27 の中央部の両端からの突出寸法比（突出高さ／幅）は、0.0

2乃至0.08、特に0.04乃至0.06の範囲にあるのがよい。幅及び突出寸法比が上記範囲よりも小さいと、減圧吸収性が十分でなく、一方上記範囲よりも大きいと、減圧吸収に際して不斉変形が生じたり、その後の容器外観が悪くなったりする。減圧吸収面27の高さ方向寸法は幅方向寸法と同様か或いはこれよりも大きいことが好ましい。

【0037】また、接続部30は、支点となるリブ形状のものであり、支点がつぶれない範囲で0.5乃至5mm程度の小さいものである。

【0038】〔肩部〕本発明では、ラベル面10の上部の肩部6にも減圧吸収面27を配置する。肩部の減圧吸収面27は、上辺に比して下辺の長さの長い台形状のものであり、この減圧吸収面27は接続部30を介して複数個（図に示す具体例では3個）設けられており把手取付部に対応する部分26とは直線部29を介して連続している。そして、減圧吸収面27を設けることに加えて直線部29を設けたことにより、減圧吸収面27が凹み変形するにつれて直線部29が内方に変形し把手取付部に対応する部分26を外方に張り出すような力を付与して、把手取付部に対応する部分26の凹み変形を防止する。本発明のボトルでは、ラベル面10を包囲するように、減圧吸収面27が上胴部7、下胴部8及び肩部6の全てに設けられているが、肩部6に設けた減圧吸収面27がラベル面10の減圧変形を防止するのに特に有効に作用し、肩部に減圧吸収面が設けられていない場合には、ラベル面10の減圧変形を避けることができない。勿論、肩部の減圧吸収面は、ラベル面10の上部に設ける必要があるが、把手取付部に対応する部分26にも、減圧吸収面27を設けても良い。

【0039】〔容器全体の構成〕本発明のボトルにおいては、肩部6及び下胴部8に減圧吸収面27を設けるが、肩部6及び下胴部8の減圧吸収面27における減圧変形が、上胴部7のラベル面10に影響しないようにすることが望ましい。このために、肩部6の減圧吸収面27と上胴部ラベル面10との間に凹ビード31を設け、また上胴部ラベル面10と下胴部8の減圧吸収面27との間にも周方向の凹ビード32を設ける。

【0040】更に把手の確実な保持及び容器の強度の点で、上胴部7の把手取付部9と下胴部8との部分が極めて重要であるが、この接続部分の変形を防止するために、上胴部の把手取付部9と下胴部8の減圧吸収面27との境界部に補強用段部33を形成して減圧時にもこの部分の変形を防止するようにしている。

【0041】本発明のボトルは、内容物を熱間充填しそのまま密封する用途に使用する。内容物を密封するため、ボトルの首部3には、キャップの締結開封用のネジ34や、ピルファープルーフ・キャップの締結用段差部35等が設けられ、更に製造工程や充填工程でボトルを支持するサポートリング36が設けられている。また、

底部5は中央部が接地面に比して高くなったドーム状をなしているが、この底部5には、ボトルを位置決めし且つその回転を阻止する係合凹部37が設けられている。

【0042】本発明のボトルにおいて、減圧吸収面27は、下胴部8、肩部6及び上胴部7に分散して設けられているが、それらの減圧吸収面の面積比は、上記順序で、一般的にいて、80〜70:10〜20:10〜10、特に80:10:10にあることが、減圧吸収及びラベル面の変形防止等の点で好ましい。

10 【0043】本発明のボトルの他の例を示す図10において、このボトルは内容積の特に大きいものであり、上胴部7の減圧吸収面27と把手取付部9との境界部に周方向の凹ビード38が形成されている。把手取付部9には、把手取付用の凸部14が形成されているため、上記の境界部の強度が低くなる傾向があり、軸方向荷重や減圧が発生したとき、この部分が変形するおそれがあるが、上記凹ビードを形成させることにより、この変形を防止することができる。

20 【0044】本発明のボトルでは、図1乃至3に示すとおり、上胴部7の把手取付部9とラベル面10とが互いに反対側に位置するようになっている。こうすることにより、ラベル面10が正面となっているときには、把手2が背面となり、把手2が隠れて、美観上好都合である。

30 【0045】本発明の把手付ポリエステルボトルは、次のような方法で製造される。予め把手2を射出成形により製造し、この把手をブロー金型内にインサートし、且つブロー金型中でボトル本体用プリフォームを延伸ブロー成形する方法（インサートブロー成形法）か、或るいは予めブロー金型中でボトル本体用プリフォームを延伸ブロー成形してボトル本体1を製造し、このボトル本体1を射出用金型内にインサートし且つ把手用樹脂を射出成形する方法（インサート射出成形法）で製造される。前者の方法が好適である。

【0046】また本発明の把手付ポリエステルボトルの内、ボトル本体1は、熱可塑性ポリエステルから成る。熱可塑性ポリエステルとしては、エチレンテレフタレート単位を主体とする熱可塑性ポリエステル、例えばポリエチレンテレフタレート（PET）やグリコール成分としてヘキサヒドロキシリレングリコール等の他のグリコール類の少量を含有せしめ或いは二塩基酸成分としてイソフタル酸やヘキサヒドロテレフタル酸等の他の二塩基酸成分の少量を含有せしめた所謂、改質PET等が使用される。これらのポリエステルは、単独でも或いはその本質を損なわない範囲で少量のナイロン類、ポリカーボネート或いはポリアリレート等の他の樹脂とのブレンド物の形で使用し得る。

【0047】用いる熱可塑性ポリエステルの固有粘度（ η ）はボトル形成用グレードでよく、0.65dl/g以上、特に0.70乃至0.90dl/gの範囲にあ

り、且つジエチレングリコール単位の含有量が 1.60 重量%以下、特に 1.50 重量%以下の範囲内にあるものが好適に使用される。

【0048】延伸ブロー成形に使用する有底プリフォームは、それ自体公知の任意の手法、例えば射出成形法、パイプ押出成形法等で製造される。前者の方法では、熔融ポリエステルを射出し、最終容器に対応する口頸部を備えた有底プリフォームを非晶質の状態に製造する。後者の方法は、押出された非晶質パイプを切断し、一端部に圧縮成形で口頸部を形成させると共に、他端部を閉じて有底プリフォームとする。一般には、射出成形法で製造することが好ましい。射出条件等は、特に限定されたものではないが、一般に、260乃至300℃の射出温度、30乃至60kg/cm²の射出圧力で、有底プリフォームを成形することができる。

【0049】かくして得られたプリフォームに耐熱性、剛性を与えるため、プリフォームの段階で螺合部、嵌合部、支持リング等を有する口頸部を熱処理により結晶化し白化せしめる場合があり、一方後述の2軸延伸ブローを完了したものをボトル成形完了後、未延伸部分の口頸部を結晶化し、白化する場合もある。

【0050】延伸ブロー成形すべきプリフォームを、延伸温度、一般に100乃至130の温度に予備加熱し、次いで二軸延伸する。60〜100度に加熱された中空金型内に、上記温度に予備加熱された熱可塑性ポリエステルのプリフォームを装着し、該プリフォームを周方向に膨張延伸させると共に、軸方向に引っ張り延伸させて側壁部、すなわち上胴部及び下胴部の結晶化度が25〜30%の範囲にあるボトルとし、内容物充填時のボトル

PET目付量	85g,	
口径		36mm,
全高		318mm,
胴部最大径	109mm,	
把手(手挿入部)		
高さ		82mm,
径方向寸法	22mm,	
下胴部減圧吸収面	6面	総面積 316cm ² 、
肩部減圧吸収面	3面	総面積 41cm ² 、
上胴部減圧吸収面	2面	総面積 41cm ² 、
ラベル面(貼付面)		
高さ		75mm,
幅		82mm,

【0055】上記ボトルに、清酒1.8リットルを充填し、60℃で充填後5℃及び15℃に冷却した。冷却後の容積減少は、5℃で58ml、15℃で49mlであった。充填時のボトルの膨らみは殆ど認められなかった。

【0056】冷却後のボトルを観察した結果では、減圧は、ボトル下胴部、肩部及び上胴部の減圧吸収面で全て吸収され、把手取付用凹部及びラベル面での不整形変形は

変形を防止すると共に減圧吸収面における減圧吸収を有効に行なう。

【0051】最終容器における延伸倍率は、面積倍率で5乃至14倍、特に7乃至12倍が適当であり、一方軸方向延伸線倍率は2乃至3.5倍、特に2.5乃至3倍とし、周方向延伸線倍率は2乃至5倍、特に3乃至4倍とするのがよい。

【0052】把手2としては、射出成形可能な熱可塑性樹脂であれば任意のものをを用いることができる。このような樹脂として、ポリエチレンテレフタレート(PET)、ポリブチレンテレフタレート等の熱可塑性ポリエステル；ポリカーボネート類；アクリルブタジエンスチレン共重合体(ABS樹脂)；ポリアセタール樹脂；ナイロン6、ナイロン66、それらの共重合ナイロン等のナイロン類；ポリメチルメタクリレート等のアクリル樹脂；アイソタクティック・ポリプロピレン；ポリスチレン等の他、低一、中一、或いは高一密度ポリエチレン、エチレン-プロピレン共重合体、エチレン-ブテン-1共重合体、スチレン-ブタジエン熱可塑性エラストマー等を挙げることができる。把手成形用樹脂には、各種着色剤、充填剤等を配合し得ることは当然である。

【0053】実施例1.

3モル%のイソフタル酸を含有するポリエチレンナフタレート/イソフタレートの共重合ポリエステル製プリフォーム及びポリプロピレン製把手を用いて、図1乃至9に示す形状の内容積1.8リットルの把手付ボトルを製造した。ボトルのヒートセットは80℃で行った。各部の寸法は次の通りである。

【0054】

全く認められなかった。下胴部の減圧吸収面は、5℃冷却の場合、凸面形状のものが5.6mm径内方向に後退して、凹面形状に反転していた。

【0057】実施例2

内容積を2.7リットルとし容器形状を図10の通りとする以外は、実施例1と同様にして、ポリエステルボトルを製造した。上記ボトルに、ウイスキー水割り2.7リットルを充填し、60℃で充填後15℃に冷却した。

充填時のボトルの膨らみは殆ど認められなかった。冷却後のボトルを観察した結果では、減圧は、ボトル下胴部、肩部及び上胴部の減圧吸収面で全て吸収され、把手取付用凹部及びラベル面での不整変形は全く認められなかった。

【 0 0 5 8 】

【発明の効果】本発明によれば、熱可塑性ポリエステル
の延伸ブロー成形で形成されたボトル本体と、ボトル本
体とは別体の熱可塑性樹脂から成る把手とを備えた減圧
吸収性把手付ポリエステル製ボトルにおいて、ボトル本
体胴部（側壁部）を上下に二分し、把手取付部、ラベル
面及び減圧吸収面を含む上胴部と、全周にわたって、連
接部を介して、減圧吸収面を設けた下胴部と、ラベル面
上の減圧吸収面を備えた肩部とから形成し、機能分離を
行わせると共に、ラベル面周囲に減圧吸収面を分散して
配置したことにより、内容物を熱間充填（ホットパッ
ク）した後での減圧変形が、把手による非対称構造にも
かかわらず、容器壁の決まった部分で有効に吸収され、
ラベル面の意図外の不斉変形が防止され、把手とボトル
との固定が完全に維持され、ラベル面の外観を良好に維
持できる。

【図面の簡単な説明】

【図 1】本発明の把手付ポリエステルボトルの一実施例
の正面図である。

【図 2】図 1 のボトルを 90° 回転させて示した右側面
図である。

【図 3】図 1 のボトルの左側面図である。

【図 4】図 1 のボトルの上面図である。

【図 5】図 1 のボトルの底面図である。

【図 6】図 1 における A-A 断面図である。

【図 7】図 1 における B-B 概略断面図である。

【図 8】図 1 における C-C 断面図である。

【図 9】図 1 における D-D 断面図である。

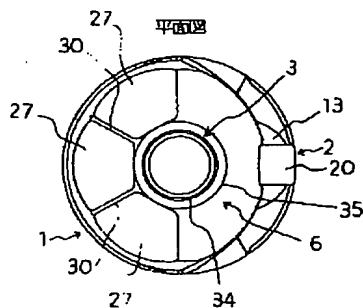
【図 10】本発明の把手付ポリエステルボトルの他の実

施例の正面図である。

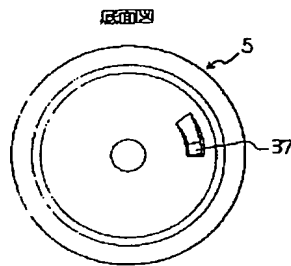
【符号の説明】

- 1 ボトル本体
- 2 把手
- 3 首部
- 4 筒状胴部
- 5 閉塞底部
- 6 錐台状肩部
- 7 上胴部
- 8 下胴部
- 9 把手取付部
- 10 ラベル面
- 11 把手取付用凹部の上面
- 12 側面
- 13 下面
- 14 把手取付用突起部
- 16 フランジ部
- 17 先端面
- 18 周状の溝
- 20 把持部
- 21 取付部
- 23 上方連結部
- 24 下方連結部
- 27 減圧吸収面
- 28 段差部
- 29 直線部
- 30 接続部
- 31 及び 32 凹ビード
- 33 補強用段部
- 34 キャップの締結開封用のネジ
- 35 締結用段差部
- 36 サポートリング
- 37 位置決め用係合凹部
- 38 補強用凹ビード

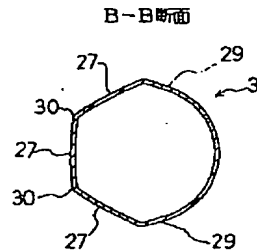
【図 4】



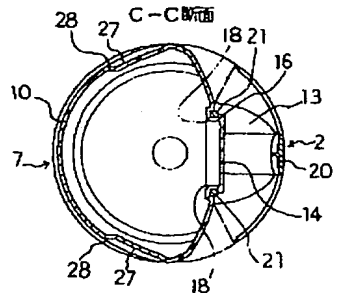
【図 5】



【図 7】

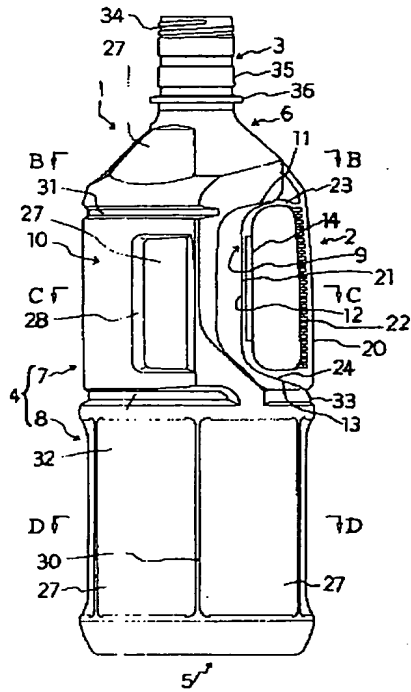


【図 8】



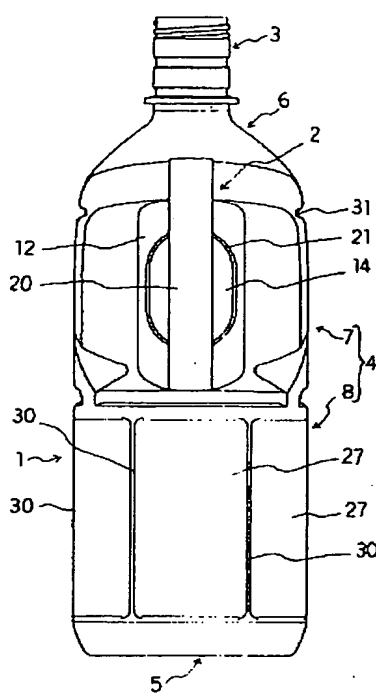
【図 1】

正面図



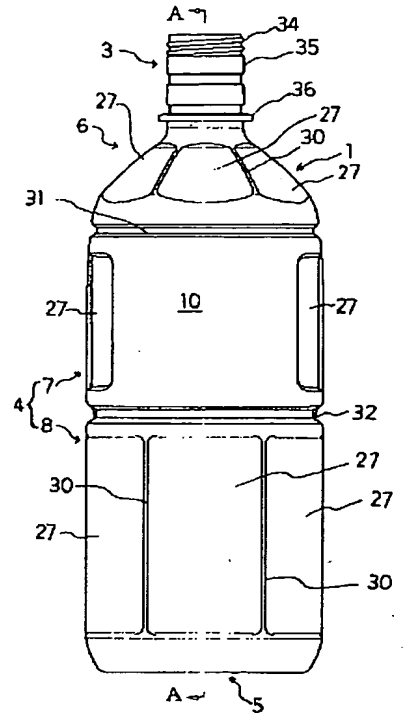
【図 2】

右側面図



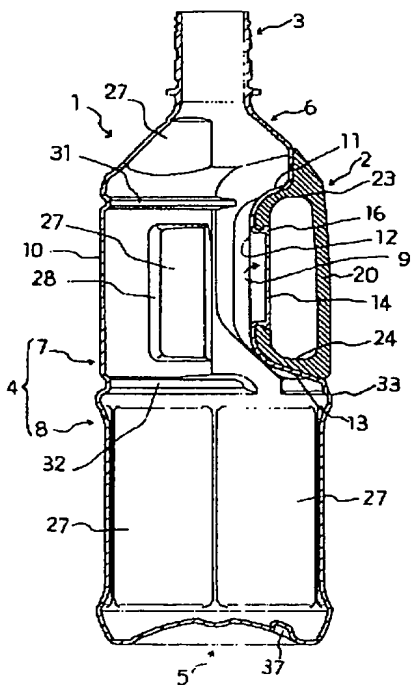
【図 3】

左側面図



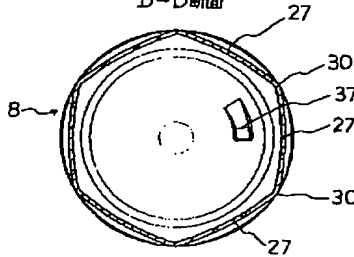
【図 6】

A-A断面



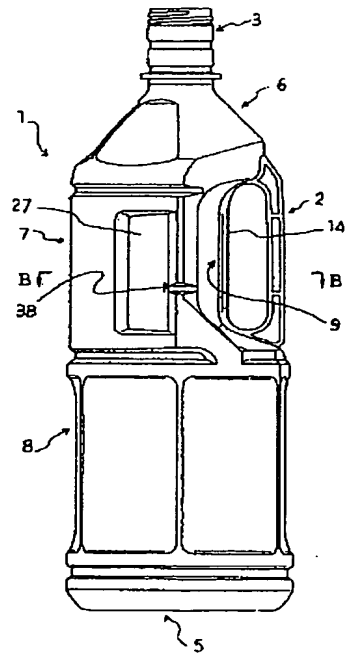
【図 9】

D-D断面



【図 10】

正面図



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